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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,963	10/22/2001	Masataka Hoshino	011354	8557

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EXAMINER

COLEMAN, WILLIAM D

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 02/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,963

Applicant(s)

HOSHINO, MASATAKA

Examiner

W. David Coleman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I invention, claims 1-8 in Paper No. 3 is acknowledged.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 5 and 8, are rejected under 35 U.S.C. 102(b) as being anticipated by Ochiai et al., Japanese Patent Publication 05-152529.

5. Pertaining to claim 1, Ochiai discloses a semiconductor device as claimed. See **FIG. 1**, where Ochiai teaches a semiconductor device, comprising:

a semiconductor substrate **31** having a first surface and a second surface opposite the first surface, and having a piercing hole piercing there- through from the first surface to the second surface;

an insulating film **45** formed on the first surface of the semiconductor substrate having the piercing hole extended there-through; and a piercing electrode **41** formed in the piercing hole and extending from the insulating film to the second surface,

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wherein the piercing hole has a first diameter in the insulating film and a second diameter in the semiconductor substrate which is wider than the first diameter; the piercing electrode has a substantially same diameter as the first diameter along a whole length thereof; and an insulating film sleeve lies between the piercing electrode and an inside wall of the piercing hole in the semiconductor substrate.

6. Pertaining to claim 4, Ochiai discloses the semiconductor device as claimed in claim 1, wherein the piercing electrode is made of a metal whose main component is a copper.

7. Pertaining to claim 5, Ochiai discloses 5. a semiconductor integrated circuit device, comprising:

a support substrate; and

a plurality of semiconductor chips stacked on the support substrate;

the semiconductor chip including a semiconductor substrate; a semiconductor element formed on a first surface of the semiconductor chip;

an insulating film formed on the first surface of the semiconductor chip as covering the semiconductor element; a multi-layer interconnection structure formed on the insulating film; a piercing hole formed in the semiconductor chip as piercing from the first surface into the insulating film through a second surface facing to the first surface; and a

piercing electrode formed in the piercing hole and extending from the first surface to the second surface; wherein the piercing hole has a first diameter in the insulating film and a second diameter in the semiconductor chip which is bigger than the first diameter; the piercing electrode has a substantially same diameter as the first diameter along whole length; and an insulating film

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sleeve lies between the piercing electrode and an inside wall of the piercing hole in the semiconductor substrate.

8. Pertaining to claim 8, Ochiai discloses the semiconductor integrated circuit device as claimed in claim 5, wherein the piercing electrode is made of a metal whose main component is a copper.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochiai et al., Japanese Abstract Publication 05-152529 as applied to claims 1,4,5 and 8 above, and further in view of Hsu, U.S. Patent 5,481,133.

11. Pertaining to claims 2 and 5, Ochiai discloses a semiconductor device substantially as claimed as discussed above. However, Ochiai fails to teach the semiconductor device as claimed in claims 1 and 5, wherein the insulating film sleeve is made of an organosiloxane group material, a siloxane hydroxide group material, an organic polymer, or a porous material of the organosiloxane group material, the siloxane hydroxide group material, or the organic polymer. Hsu discloses an insulating film comprised of an organic polymer. In view of Hsu, it would have been obvious to one of ordinary skill in the art to incorporate an organic polymer film into the Ochiai semiconductor device because the overlying layer of organic material is deposited over

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the to pf the subordinate substrate (column 3, lines 2-30, please note that the organic polymer is labeled as element 40).

12. Pertaining to claims 3 and 7, the combined teachings fail to teach the semiconductor device as claimed in claims 1 and 5, wherein the insulating film sleeve has a relative permeability of approximately 3.0 and under. Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 f.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

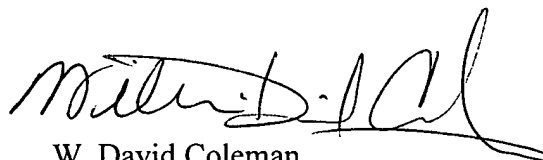
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Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



W. David Coleman
Examiner
Art Unit 2823

WDC
February 5, 2003